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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/787,309

06/04/2001

Oleg N. Portniaguine

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03/26/2004

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EXAMINER

TUCKER, WESLEY J

ART UNIT

PAPER NUMBER

2623

DATE MAILED: 03/26/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/787,309

Applicant(s)

PORTNIAGUINE ET AL.

Examiner

Wes Tucker

Art Unit

2623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-18 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S.

Patent 5,358,676 to Fan.

With regard to claim 1, Fan discloses a method of digital image enhancement of a multidimensional digital image, said image being represented by a matrix [d] comprising image parameters, wherein said matrix [d] is mathematically manipulated to solve a linear ill-posed problem to reduce blurring, the improvement comprising: imposing a constraint on a reconstructed image matrix, said constraint being based upon minimization of the area where strong variations and discontinuities between said image parameters occur (Abstract, step d and e). Fan discloses a method of improving the appearance of an image by adaptively filtering that image depending on the detection of edges or area where strong variations between image parameters occur.

With regard to claim 2, Fan discloses the method of claim 1, the improvement further comprising: implementing said constraint in the form of weights imposed upon

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said image parameters (Abstract, step e). Here Fan determines weights or filtering coefficients depending on edge location information.

With regard to claim 3, Fan discloses the method of claim 2, the improvement further comprising: imposing penalization upon said image parameters, thereby to keep said parameters within reasonable limits of variation (Abstract, step f). Here Fan compares coefficients to see if they are derivable from the original image.

With regard to claim 4, Fan discloses the method of claim 3, the improvement further comprising: solving said ill-posed problem by means of an iterative loop using a programmed computer (Abstract, step f). Fan discloses an iterative processing comparing transform coefficients used to filter the image.

With regard to claim 5, Fan discloses the method of claim 4, stopping said iterative loop when the norm of a difference between the observed degraded image and a numerically predicted degraded image corresponding to an iteratively sharpened image reaches a tolerance value (Abstract, steps f and g). Here Fan discloses a comparing of the filtered recovered image for a correspondence to the original image.

***Allowable Subject Matter***

2. Claims 6-18 are allowed.

The following is an examiner's statement of reasons for allowance: With respect to claim 6, none of the prior art teach or fairly suggest the use of a transposed complex conjugated blurring operator, and an inverse gradient operator to restore a digital image. Although U.S. Patent 5,359,676 to Fan discloses a method for an adaptive filtering system using inverse transforms and filtering (Fig. 21), Fan does not disclose the use of applying a transposed complex conjugated blurring operator, and an inverse gradient operator to restore a degraded image.

Any comments considered necessary by the applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should clearly be labeled "Comments on Statement of Reasons for Allowance."

3. Other prior art considered relevant but not relied upon is as follows:

U.S. Patent 6,055,340 to Nagao

U.S. Patent 6,628,329 to Kelly et al.

U.S. Patent 6,266,054 to Lawton et al.

U.S. Patent 6,094,511 to Metcalfe et al.

U.S. Patent 5,602,934 to Li et al.


4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 703-305-6700. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amelia Au can be reached on (703) 308-6604. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wes Tucker

3-15-04

  
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